



SCIENTIFIC DATABASES: PROJECTS AND SERVICES

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SCF Leaders Meeting
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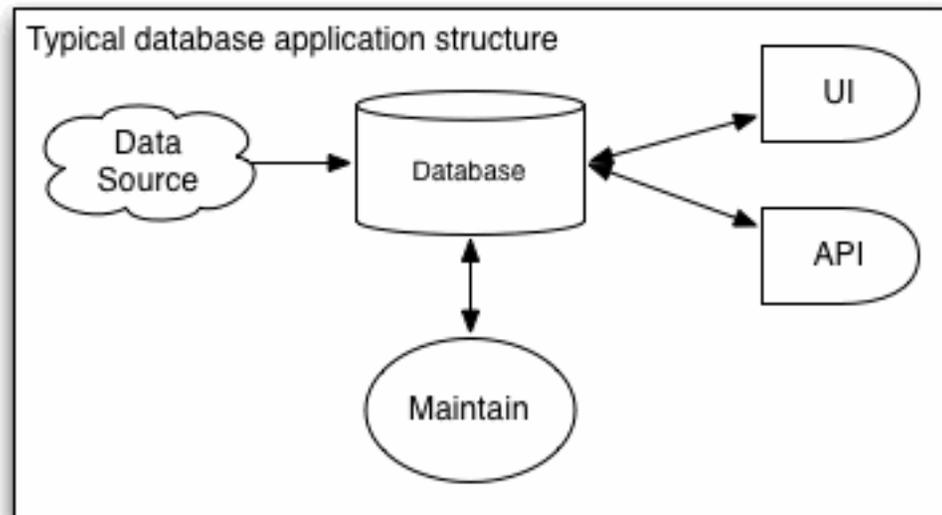
Who we are

- Scientific Programs quadrant
 - Running Experiments department
 - Scientific Database Applications group
- Mission
 - Design, develop, support and run database applications for experiments, collaborations and the Lab

Our users

- Run II
 - D0, CDF
- Intensity Frontier experiments
 - NOvA, Minerva, MiniBooNe, Minos
- DES
- AD and R&D
 - ILC, Project X
- Others
- About a dozen different applications
 - ~30 instances
- CD
 - Oracle, Postgres and MySQL client support

What is a database application ?



- Collect data
- Maintain data
- Make data available

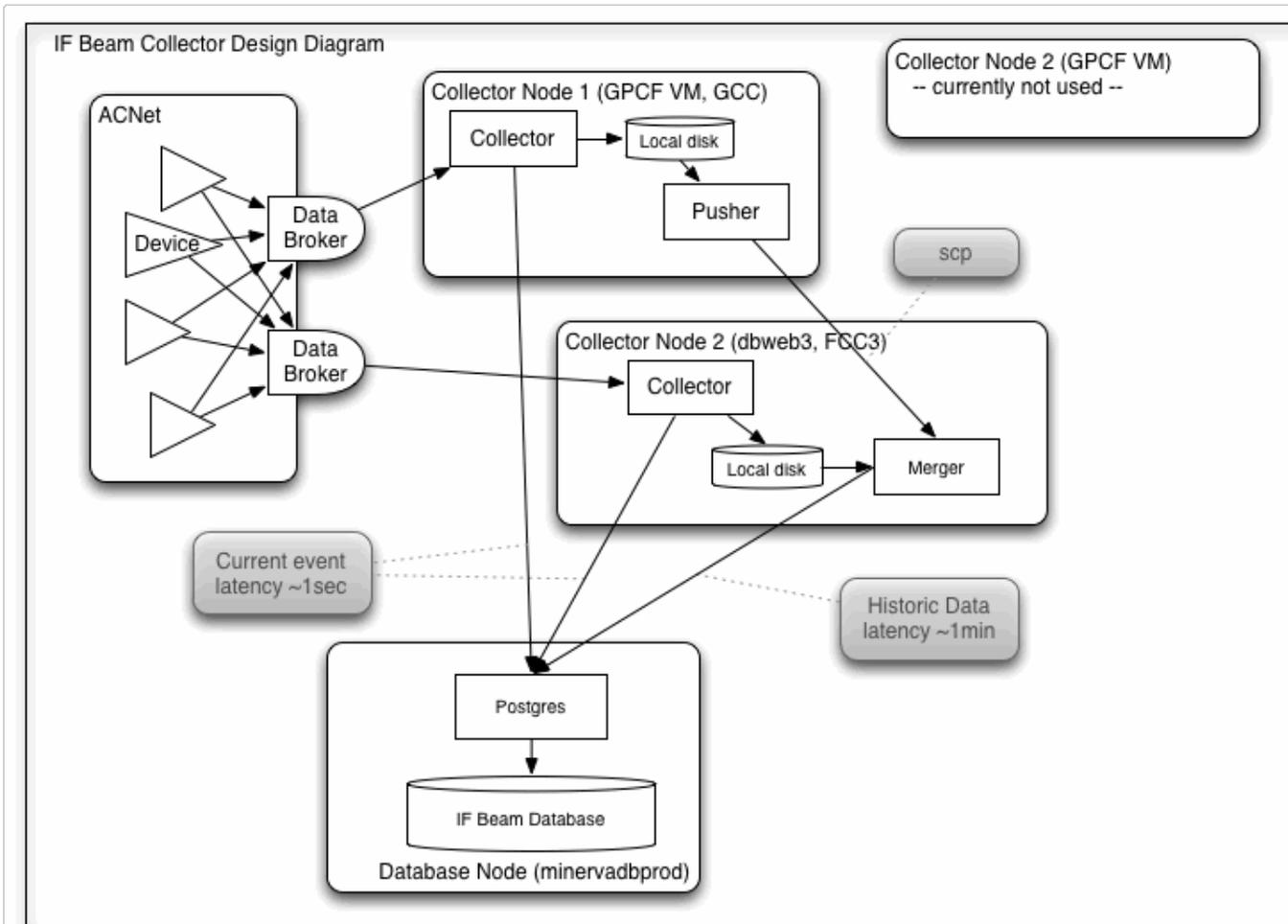
Electronic Collaboration Logbook (ECL)

- Revamped Control Room Logbook (CRL)
- 23 instances + DES ?
 - Collaborations
 - Experiments
 - Groups of people
 - Running on dbweb3/4, located in FCC3, managed by FEF

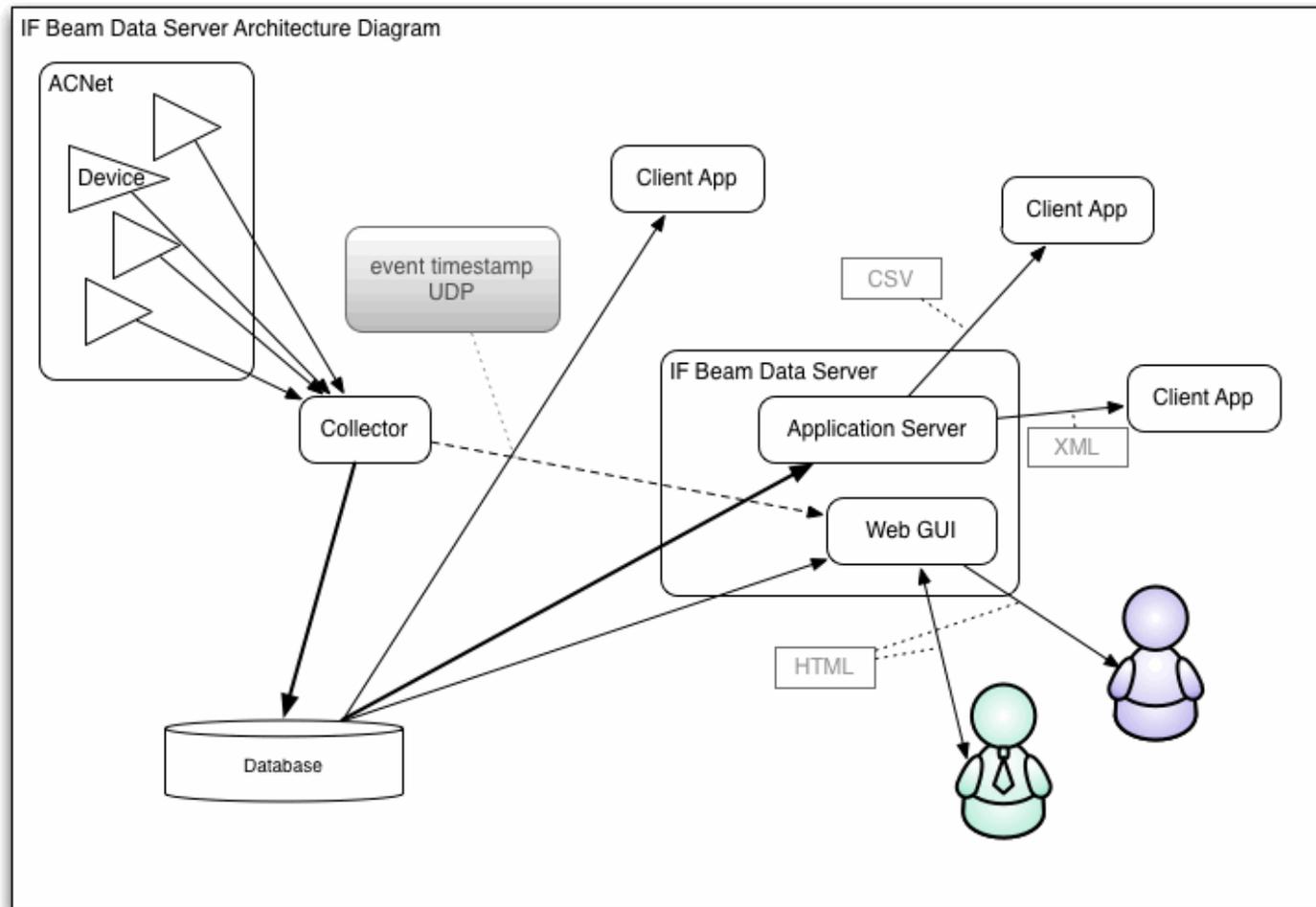
Intensity Frontier Beams Database

- Real time and historic beams conditions data
- Highly robust and reliable
 - Critical for data processing
- We collect ~500 variables from ACNet every 2 seconds
 - ~50 of them to be stored indefinitely (~10 years)
 - The rest is kept for ~days, used for monitoring
- Growth rate ~100 GB/month
- Real time component latency ~1 second
- Historic data latency ~1 minute
- Running since ~2 months ago
 - 4M events
 - 0.25B data rows

IFBeam Data Collector



IFBeam Data Server



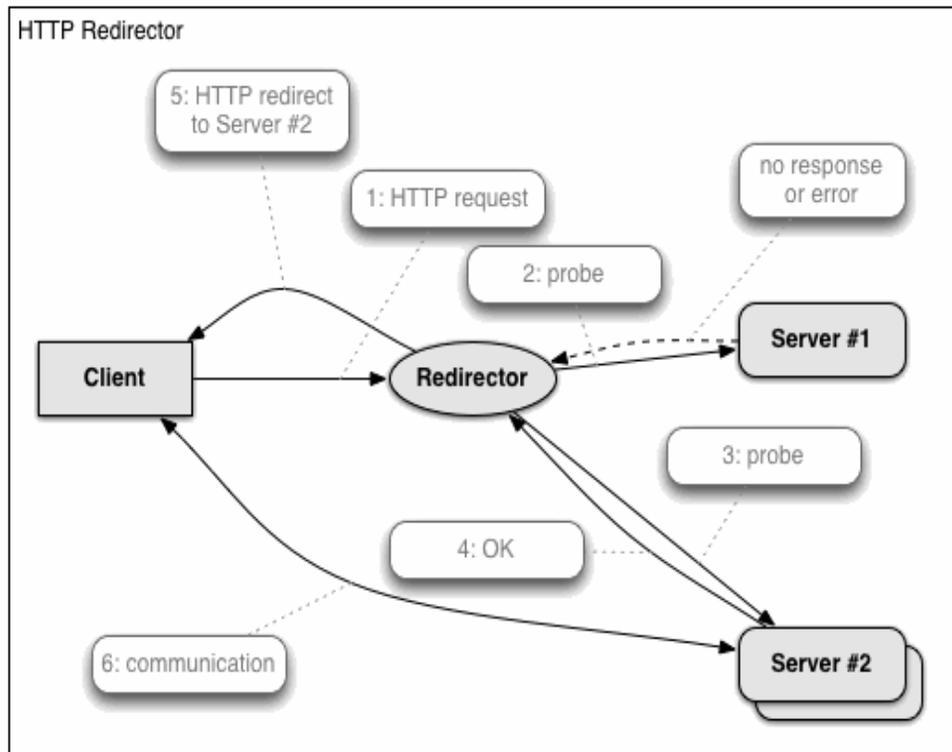
Minerva Conditions Database

- Stores timestamp'ed calibration information for Minerva
- Pedestal calibration
 - 30K channels per snapshot * 5K snapshots
 - 160M total channels (=rows in the table)
 - 9 floating point numbers per channel
- FEB calibration
 - 30K channels * 124 snapshots
 - 3.6M rows
 - 39 floating point numbers per channel
- PMT Gains
 - 30K channels * 658 Snapshots
 - 21M rows
 - 4 floating point numbers per channel
- Use web service between the database and the Grid
 - Throttle mechanism
 - Data cache
 - Limit direct access to the database

Query Engine

- HTTP-based access to databases
 - Oracle
 - Postgres
 - MySQL
- Simplified, rewritten Misweb
- Allows building simple web form-based data access applications without programming
- SAM database browser for D0, Minerva
- DES exposure viewer
- NOvA calibration data access

HTTP Redirector



- Allows building redundant web servers
- Increases service availability without adding to the support cost
- <http://dbweb0.fnal.gov>